REMARKS

This application has been reviewed in light of the Office Action dated July 29, 2003. Claims 1-5, 7, 8, and 10-24 are presented for examination, of which claims 1, 10, 15, and 20, the independent claims, have been amended to define still more clearly what Applicants regard as their invention, and claims 3 and 17 have been amended to ensure the equations contain the proper parenthetical sets. Claim 6 has been canceled without prejudice or disclaimer of subject matter and will not be mentioned further. Favorable reconsideration is requested.

Applicant notes with appreciation the indication that claims 3, 4, 12, 13, 17, 18, 22, and 23 would be allowable if rewritten so as not to depend from a rejected claim, and with no change in scope. These claims have not been so rewritten because, for the reasons given below, their base claims are believed to be allowable.

Claims 1, 2, 5, 7, 10, 11, 14-16, 19-21 and 24 are rejected under 35 U.S.C. §103(a) as being obvious from anticipated by US. Patent No. 5,054,100 (*Tai*) in view of US Patent No. 6,263,120 (*Matsuoka*).

As shown above, Applicants have amended independent claims 1, 10, 15, and 20 in terms that more clearly define what they regard as their invention. Applicants submit that these amended independent claims, together with the remaining claims dependent thereon, are patentably distinct from the cited prior art for at least the following reasons.

The aspect of the present invention set forth in claim 1 is a method of interpolating a first set of discrete sample values to generate a second set of discrete sample values using one of a plurality of interpolation kernels. The interpolation kernel is selected depending on an edge strength indicator, an edge direction indicator and a local contrast

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used to indicate text regions represented by the first set of discrete sample values in order to optimize the selection of the interpolation kernel.

Among other important features of claim 1 is that the interpolation kernel is selected depending on an edge strength indicator, an edge direction indicator and a local contrast indicator for each of the discrete sample values of the first set, and the local contrast indicator is used to indicate text regions represented by the first set of discrete sample values in order to optimize the selection of the interpolation kernel. That is, the appropriate interpolation kernel is selected for each image region, and in particular for text regions. As described at page 10, lines 20 to 24, of the specification[1], the "local contrast between neighboring pixels is used as a basis of text region detection". Further, as described at page 11, lines 6 to 8, "the detected text regions contain cases of isolated pixels, or pixel groups, which are labeled as text. To reduce the chances of unnecessary interpolation kernel switching, these cases need to be removed". Essentially, claim 1 separates out the text regions of an image for interpolation.

As discussed previously in the Amendment And Petition For Extension Of Time dated May 14, 2003, *Tai* relates to electronic photocopiers and printers which digitally enlarge and reduce an image defined by stored gray-level values. *Tai* discusses interpolating existing gray-level pixel data to obtain new pixel values during image enlargement and reduction.

Matsuoka relates to an image-data interpolation processing method for interpolating insufficient image data to achieve high-resolution transformation and magnification of a multigradational image containing different kinds of components co-existing in the image.

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[1]It is understood, of course, that the claim scope is not limited by the details of the described embodiments, which are referred to only to facilitate explanation.

In making the rejection under Section 103(a) the Examiner concedes that *Tai* uses the edge information described in *Tai* to modify one equation rather than selecting a different interpolation kernel. Applicants concur. However, the Examiner contends that *Matsuoka* teaches that it is known to interpolate using one of a plurality of interpolation kernels depending on edge information and that it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the modifying of one equation disclosed by *Tai* to include selecting one of a plurality of interpolation kernels, in order to perform adaptive interpolation.

Applicant submits that neither *Tai* nor *Matsuoka*, nor any combination thereof (assuming *arguendo* that any such combination would be permissible) teaches or suggests the method of claim 1, of an interpolation kernel being selected depending on an edge strength indicator, an edge direction indicator and a local contrast indicator for each discrete sample value of a first set of discrete sample values, and the local contrast indicator being used to indicate text regions represented by the first set of discrete sample values in order to optimize the selection of the interpolation kernel.

As conceded by the Examiner, *Tai* fails to teach or suggest the feature of selecting an interpolation kernel depending on an edge strength indicator, an edge direction indicator and a local contrast indicator. Further, Applicants submit that nothing has been found, or pointed out, in *Tai* that would teach or suggest the feature of using a local contrast indicator to indicate text regions. In fact, the only reference to "text" in *Tai* is in relation to the portion of a bit map shown in Fig. 1, where the bit map is produced by "existing data". *Tai* states at column 3, lines 41 to 48, that "[w]ith an electrophotographic copier, the existing data may be derived from scanning an original document with an electronic scanner which converts the optical signals into electrical signals. For use with a printer, the data may be produced by

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creating *text* or graphics representations at a workstation and converting that information into the digital information partially in Fig. 1." The Examiner cites the following passage, by using this technique (i.e., the technique disclosed by *Tai)*, the equation (5), which is used to calculate the new value according to this invention, effectively recognizes an edge of high contrast in the image data and modifies the equation to provide a value for the new pixel which will not reduce the sharpness of the new image as much as conventional techniques (column 6, lines 4-11), as the local contrast. However, there is no connection between the above discussed passages in *Tai,* and nothing has been found that would teach or suggest using a local contrast indicator to indicate text regions.

Furthermore, the portion of *Matsuoka* cited by the Examiner (column 2, lines 16-25), actually teaches away from claim 1. In particular, *Matsuoka* states that there is no need for separation of areas before interpolation, which is in direct contrast to claim 1. Consequently, any purported motivation provided by *Matsuoka* to combine the references in order to meet the claimed invention as defined by claim 1 would have been removed by this passage of *Matsuoka*.

Accordingly, Applicants submit that claim1 is clearly patentable over the cited art.

Independent claims 10, 15, and 20 are method, apparatus, and computer readable medium claims, respectively, corresponding to method claim 1, and are believed to be patentable over Tai for at least the same reasons as those discussed above in connection with claim 1.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the

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invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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